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Honorable Michael Leavitt, Administrator
U.S. Environmental Protection Agency
EPA Docket Center (Air Docket)
Mail Code: 6102T, Room B-108
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Attention Docket ID No. OAR-2002-0056

Dear Administrator Leavitt:

The Institute of Clean Air Companies (ICAC) is the national trade association of companies that supply air pollution control and monitoring technology. Our members include nearly eighty leading suppliers of air pollution control and monitoring technologies for stationary sources. These companies operate and provide environmental solutions for affected industries as well as employment opportunities across the U.S.

The Institute applauds EPA's efforts to request further information on a much-needed rule that provides for the reduction of mercury emissions from coal- and oil-fired electric generating facilities in order to protect public health. The Institute has a few observations concerning the notice of data availability (NODA) for the Utility Mercury Reduction Rule specifically concerning the performance of control technologies, technology guarantees, commercial availability, control costs, by-product disposal, and availability of construction resources. The Institute continues to work with stakeholders, including the owners and operators of major generating facilities, to develop a better understanding of the control and measurement technologies that can achieve and exceed the requirements of a mercury control rule. These discussions have in part led to the strengthening of our industry's position on the need to instill flexibility in compliance requirements, to promote industrial progress without disadvantaging coal as an energy source, continuing reliable electric generation, and to encourage additional research and development of additional cost-effective control technology options.

The Institute advocates EPA's investigation and use of flexible approaches to promote innovation and early compliance with requirements. Within the MACT framework EPA has used flexible approaches that should be considered again in the utility mercury MACT program. For example, in the large municipal waste combustor MACT, EPA relied on Section 111(d) and 129 to allow State Plans backed up by Federal Plans to achieve compliance. If states did not have an approved State Plan, the Federal Plan would apply with a generic compliance schedule and "increments of progress" toward the retrofits of air pollution control by the compliance deadline. Many states have approved plans, with some inherent flexibility, and did not require the Federal backstop. There are other examples in other MACT programs where beyond the floor technologies have been used as the basis for establishing limits, but EPA has provided a backstop should the technology not perform as expected.

The rapid development of mercury control technologies over the last several years, primarily as a result in public and private investments in research and development, has produced a number of technologies that are available for the implementation of a national mercury control regulation for coal- and oil-fired power plants. A large number of laboratory tests and full-scale demonstrations have been conducted that provide information on the effectiveness of controls for various coal types and control configurations. As demonstrated in the past for a number of other pollutants, market response to a regulatory requirement will provide the single greatest push for the advancement and commercialization of control and measurement technologies. However, despite the lack of any current national control requirement for mercury, a number of options are already commercially available while others are still in the development and testing phases.

Past experience with technology development for other pollutants (SO_2, NO_x, and PM) as well as other source categories such as mobile sources, suggests that delaying the regulation of mercury emissions from power plants would serve to delay further development of innovative control technologies. Research and development efforts are unlikely to be sustained at a vigorous level in the absence of regulatory or other drivers capable of creating a viable market for advanced control technologies. Larger markets provide more incentives for the development of technologies as well as foster competition between vendors that produces more innovative and cost effective solutions for affected sources. Smaller markets such as those that may be developed with the implementation of State regulations (e.g. Massachusetts, Connecticut, Wisconsin, New Jersey, North Carolina) are beneficial to the air pollution control industry but will be less effective in developing healthy markets than a timely implemented national program.

With the implementation of a national program, multiple control options including precombustion, combustion and post combustion technologies will contribute to meeting the required emission reductions. Coal cleaning as well as coal switching are examples of options that have the potential to reduce mercury emissions prior to fuel combustion that are not discussed further in these comments.

Based on the recent test results, significant amounts of mercury can be removed through the use of existing controls. Existing control installations such as fabric filters, electrostatic precipitators, SO_2 scrubbers, and selective catalytic reduction (SCR) are currently achieving high levels of mercury reductions even though these processes were not originally designed nor optimized for mercury capture. With the implementation of mercury regulatory requirements beyond incidental co-benefit levels of control, a number of options for optimization of existing controls will be implemented to provide cost effective reductions in a short period of time.

Mercury specific control technologies such as sorbent injection systems have been demonstrated at full-scale. Multipollutant control approaches as well as other mercury specific technologies have also demonstrated significant progress and will provide additional low cost, innovative approaches to mercury control.

It is important to note that EPA's modeling assumes no advancement in the development of mercury control technology and no reduction in the cost of mercury control technology over time. These assumptions are contradictory to both historical trends with control technology for other pollutants and the current rapid progress in mercury control technology development. As noted, the progress in advancing mercury control technologies has been rapid without increasing opportunities to lower the cost of control. Regulatory drivers are a powerful market tool that drives competition in our industry. Often lower cost solutions emerge after regulatory requirements have been established, rather than before.

There have been a number of arguments made that state that mercury control technologies are not available. Many of these perspectives invoke all too familiar arguments that have been offered in the past to dissuade EPA from promulgating an effective rule. For example, during promulgation of the NO_x Transport SIP Call in 1998 a number of commenters claimed that the prominent control technologies, SCR and SNCR, had not been fully demonstrated on large units (250 MW and larger) or domestically; was an immature technology; would not be attainable on a sustained basis; had not been adequately demonstrated on all U.S. coals; were incapable of meeting guaranteed performance; and were not able to be constructed in time for compliance due to inadequate resources to accomplish what now has already been done with considerable success. As part of these comments on NO_x control for major industrial and electric generating facilities, EPA was urged not to rely on "emerging control technologies" that provide no assurance of being able to achieve mandated emission reduction levels. However, EPA's promulgation of the NO_x SIP Call was steeped in success and advancement of these and other NO_x control technologies. Today, mercury control technology advances and commercial availability have surpassed the position we once held on NO_x control before the NO_x SIP Call. However, the addition of compliance flexibility should reduce any perceived or real uncertainties and would provide opportunities to use additional control options.

1. POST COMBUSTION CONTROL TECHNOLOGIES

i. Sorbent Injection Technology

a. Technology Description

Injecting a sorbent such as powdered activated carbon, bromine, polysulfides, or other sorbent into the flue gas represents a relatively simple approach to controlling mercury emissions from coal-fired boilers. The gas-phase mercury in the flue gas contacts the sorbent and attaches to its surface. The sorbent with the mercury attached is then collected by the existing particle control device, either an electrostatic precipitator (ESP) or fabric filter (FF).

The air pollution control industry already has considerable experience with the implementation of mercury controls for other industrial sectors. Sorbent injection has been commercially proven to augment the removal of mercury in waste-to-energy plants. Experience controlling mercury emissions has been gained in more than 60 U.S. and 120 international waste-to-energy plants that burn municipal or industrial waste or sewage sludge. For the past two decades, sorbent injection upstream of a baghouse has been successfully used for removing mercury from flue gases from these facilities. Other reagents used include activated carbon, lignite coke, sulfur containing chemicals, or combinations of these compounds. The mercury control experience gained from the municipal and industrial waste combustors demonstrates that the air pollution control industry has been able to control mercury in the past and is able to apply their expertise to the electric power sector.

b. Performance and Applicability

EPA has requested comment concerning the availability of sorbent injection technologies to serve the electric power market. Activated carbon injection equipment is currently being sold to utilities. ACI equipment is identical for all coal types including bituminous, subbituminous, lignites and blends. Therefore, ACI equipment can be purchased for all coals and all plant configurations.

The specific sorbents may vary for different coals and operating conditions. In addition, the ability to accurately predict the levels of mercury removal that will be achieved will vary for different coals depending on the available performance data. For example, there have been a significant number of tests over the past year and a half on PRB coals and North Dakota lignites. Therefore, it is possible to estimate results for these configurations. There is less data on bituminous coals, so predictions will be less precise. Several full-scale field tests will be conducted on bituminous coals during 2005 and 2006. The first test on a Texas lignite will be conducted in 2005. Until this occurs, it is difficult to predict performance on Texas lignite.

The performance of activated carbon injection systems for lignite, subbituminous, and bituminous coals on various coal-fired power plant configurations are given in Table 1. The mercury reduction performance for these power plant scenarios are based on results from full-scale demonstrations that have been documented in various technical papers presented at major electric power conferences.

Table 1. Activated Carbon Injection Control Technology Options

Plant Configuration	Technology	Coal Type	% Reduction				Cost		Year Commercially Available
			Min	Max	Avg. Total[a]	Avg. Incrm.[b]	Capital ($/kW)	O&M ($/kWh)	
CESP[d]	ACI[f,g]	Bit	50	90	70	70	1.5 to 3	.0012	2004
	ACI[g,h]	Sub	0	95	80	80	1.5 to 3	.0005	2004
	ACI[i]	Lig	0	80	63	63	1.5 to 3	.0005	2004
CESP/FGD	ACI[j]	Bit	50	90	70	70	1.5 to 3	.0012	2004
	ACI	Sub	0	95	80	80	1.5 to 3	.0005	2004
	ACI[k]	Lig	0	80	60	70	1.5 to 3	.0005	2004
CESP/FGD-dry	ACI	Bit	80	>90	>90	88	1.5 to 3	.00012	2004
	ACI	Sub	0	90	80	85	1.5 to 3	.00017	2004
	ACI	Lig	0	90	70	70	1.5 to 3	.00017	2004
CESP/SCR/FGD	ACI	Bit	50	90	70	70	1.5 to 3	.0012	2004
	ACI	Sub	0	95	80	80	1.5 to 3	.0005	2004
	ACI	Lig	0	80	60	60	1.5 to 3	.0005	2004
FF	ACI[l]	Bit	20	95	85	80	1.5 to 3	.00036	2004
	ACI[l,m]	Sub	20	90	90	80	1.5 to 3	.00054	2004
	ACI	Lig	20	80	80	75	1.5 to 3	.00054	2004
FF/FGD	ACI	Bit	50	95	90	70	1.5 to 3	.00012	2004
	ACI[l]	Sub	30	90	90	80	1.5 to 3	.00027	2004
	ACI	Lig	30	90	85	70	1.5 to 3	.00027	2004
FF/SCR/FGD-dry	ACI	Bit	80	>90	>90	50	1.5 to 3	.00012	2004
	ACI[n]	Sub	0	>90	>90	90	1.5 to 3	.00017	2004
	ACI[o]	Lig	0	90	75	70	1.5 to 3	.00017	2004
FF/SCR/FGD	ACI	Bit	50	95	90	70	1.5 to 3	.00012	2004
	ACI	Sub	30	90	90	80	1.5 to 3	.00027	2004
	ACI	Lig	30	80	80	70	1.5 to 3	.00027	2004
HESP[e]	TOXECON[p]	Bit	20	95	85	80	3 + 15 to 3 + 50	.00036	2004
	TOXECON	Sub	20	90	90	80	3 + 15 to 3 + 50	.00036	2004
	TOXECON	Lig	20	80	80	70	3 + 15 to 3 + 50	.00054	2004
HESP/FGD	TOXECON	Bit	50	95	90	70	3 + 15 to 3 + 50	.00012	2004
	TOXECON	Sub	30	90	90	80	3 + 15 to 3 + 50	.00036	2004
	TOXECON	Lig	30	80	80	70	3 + 15 to 3 + 50	.00027	2004

HESP/FGD-dry	TOXECON	Bit	80	>90	>90	50	3 + 15 to 3 + 50	.00012	2004
	TOXECON	Sub	0	>90	>90	90	3 + 15 to 3 + 50	.00017	2004
	TOXECON	Lig	0	90	88	70	3 + 15 to 3 + 50	.00017	2004
HESP/SCR/FGD	TOXECON	Bit	50	95	90	70	3 + 15 to 3 + 50	.00012	2004
	TOXECON	Sub	30	90	90	80	3 + 15 to 3 + 50	.00036	2004
	TOXECON	Lig	30	80	80	70	3 + 15 to 3 + 50	.00027	2004

[a] This is the percent reduction attributable to the existing pollution controls and the technology.
[b] This is the percent reduction attributable only to the technology.
[c] In EPA's modeling, is it appropriate for an economic forecast to assume an improvement in costs over time (such as through technology cost reductions or through future technology innovation).
[d] CESP – represents cold-side electrostatic precipitator
[e] HESP - represents hot-side electrostatic precipitator
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[j] Dombrowski, K., et.al., (2004). *"Sorbent Injection for Mercury Control Upstream of Small-SCA ESPs."* Combined Power Plant Air Pollutant Control Mega Symposium, Washington, D.C., August 29 – September 2.
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[n] Sjostrom, S., et.al., (2004). *"Full-Scale Evaluation of Mercury Control by Injecting Activated Carbon Upstream of a Spray Dryer and Fabric Filter."* Combined Power Plant Air Pollutant Control Mega Symposium, Washington, D.C., August 29 – September 2.
[o] Machalek, T., et.al., (2004). *"Full-Scale Activated Carbon Injection for Mercury Control in Flue Gas Derived from North Dakota Lignite."* Combined Power Plant Air Pollutant Control Mega Symposium, Washington, D.C., August 29 – September 2.
[p] Berry, M, J. Bustard., et.al., (2004). *"Field Test Program for Long-Term Operation of a COHPAC® System for Removing Mercury from Coal-Fired Flue Gas."* Combined Power Plant Air Pollutant Control Mega Symposium, Washington, D.C., August 29 – September 2.